CLAIMS

1. Composite material comprising, by weight, the total being 100% :

A) 40 to 90% of polyvinyl difluoride (PVDF) homopolymer or copolymer crystallized sufficiently in the β form to provide the components with a positive temperature coefficient (PTC) effect,

B) 10 to 60% of a conductive filler,

C) 0 to 40% of a crystalline or semi-crystalline polymer,

D) 0 to 40% of a filler other than (C),

such that the crystals in the β form are nucleated on the surface of the particles of the conductive filler.

2. Material according to Claim 1, in which (A) is chosen from copolymers of vinylidene difluoride (VF2) and trifluoroethylene (VF3) having at least 60 mol% of VF2.

3. Material according to Claim 1, in which (A) is chosen from copolymers of VF2 tetrafluoroethylene (TFE) and hexafluoropropylene (HFP) having at least 15 mol% of TFE units.

4. Material according to Claim 3, in which (A) is chosen from VF2-TFE-HFP copolymers with the respective molar composition 60 to 80/ 15 to 20/ 0 to 25.

5. Material according to Claim 1, comprising (C), in which (C) comprises a PVDF homopolymer which is not in the β form or a VF2-HFP copolymer comprising at least 85% of VF2.

6. A heating device comprising the composite material according to Claim 1.

7. Material according to Claim 1, comprising (C).

8. Material according to Claim 1, wherein the conductive filler (B) comprises a metal powder, carbon black, graphite or a metal oxide.

9. Material according to Claim 8, wherein the conductive filler (B) comprises graphite.

10. Material according to Claim 5, wherein the conductive filler (B) comprises a metal powder, carbon black, graphite or a metal oxide.

11. Material according to Claim 2, comprising (C), in which (C) comprises a PVDF homopolymer which is not in the β form or a VF2-HFP copolymer comprising at least 85% of VF2.

12. Material according to Claim 3, comprising (C), in which (C) comprises a PVDF homopolymer which is not in the β form or a VF2-HFP copolymer comprising at least 85% of VF2.

13. Material according to Claim 1, wherein (A) comprises at least 60% of the β form.

14. Material according to Claim 1, wherein (A) comprises at least 75% of the β form.

15. Material according to Claim 10, comprising (D) wherein (D) comprises at least one of silica, polymethyl methacrylate and a UV inhibitor.

16. An article comprising an insulating surface coated with a coating of the composite material according to Claim 1.

17. An article according to Claim 16, wherein the insulating surface is a ceramic.

18. A paint comprising a solvent dispersion of the composite material according to Claim 1.

19. A process of producing the article according to Claim 16, comprising applying the coating as a melt of the composite material to the insulating surface.

20. A process of producing the article according to Claim 16, comprising applying the coating as a solvent dispersion of the composite material to the insulating surface.